

## Analysis of Factors Affecting the Development of Children of Toddler Ages Assessed from History of Infection Diseases, Nutritional Status and Psychosocial Stimulation in Ponorogo Regency

### ABSTRACT

Rischa Devi Hayuningtyas<sup>1</sup>,  
Siti Farida Noor Laila<sup>2</sup>,  
Nurwijayanti<sup>2</sup>

<sup>1</sup> Students of Community Health  
Science Postgraduate Program  
Institut Ilmu Kesehatan STRADA  
Indonesia

<sup>2</sup> Lecturer of Institut Ilmu  
Kesehatan STRADA Indonesia

Email:  
[rischatyas23@gmail.com](mailto:rischatyas23@gmail.com)

Child development is the result of maturation of organs, especially the central nervous system. Development occurs throughout life consisting of several stages, one of which is toddler. The toddler age occurs from 1 to 3 years old, where child development occurs very rapidly and is a golden period in children. Success in mastering developmental tasks at toddler age requires a strong foundation during the period of growth and development. This study aims to analyze factors that influence the development of toddler age children in terms of history of infectious diseases, nutritional status and psychosocial stimulation in Ponorogo Regency. The research design used is quantitative research with a cross sectional approach with a propopotional stratified random sampling method. The samples were taken as many as 302 mothers and toddler age children in the Ponorogo regency. The test used in this study was ordinal regression. The results showed the effect of value infectious disease history variable (wald = 10,356, P value = 0,001, estimate = 1,386), nutritional status value (wald = 810,900, P value = 0,000, estimate = 13,303). The value of psychosocial stimulation (Wald = 7,952, P value = 0,005, estimate = 1,309). at  $\alpha = 0.05$ , the influence of the development of toddler age children is influenced by a history of infectious diseases, nutritional status and pshycosocial stimulation significantly. The development of toddler age in Ponorogo Regency is influenced by a history of infectious diseases, nutritional status and psychosocial stimulation. It is recommended that mothers pay more attention to adequate nutritional intake so that toddler-age children are not susceptible to infectious diseases. And supported psychosocial stimulation for optimal development. Nutritional status is the most dominant factor contributing to the development of toddler age children.

**Keywords:** Development of toddler ages, history of infectious diseases, nutritional status, psychosocial stimulation

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## INTRODUCTION

An important period in the period of growth and development of a child is childhood. Because at this time is a basic growth process which will influence and determine the process of further development. Childhood period is called the golden period, where development will run very quickly which includes the development of language skills, creativity, social awareness, emotional awareness and intelligence (Soetjiningsih, 2012).

Child development is the result of maturation of body organs, especially the central nervous system. Development occurs throughout life which consists of several stages, one of which is the toddler (Mitha, Amatus & Yolanda, 2018). The toddler age occurs between 1 and 3 years, where child development occurs very rapidly and is a golden period in children because at this time the child will learn new things. Success in mastering developmental tasks at toddler age requires a strong foundation during the period of growth and development (Ades Santri & Antarini Idriansari, 2014).

According to UNICEF data in 2011, data on the incidence of developmental disorders in children under the age of five, especially motor development disorders, were as high as (27.5%) or 3 million children experiencing disorders. Whereas in Indonesia alone, until now there is still no national data regarding developmental disorders in infants. The Indonesian pediatrician association (IDAI) in 2013 stated that around 5% to 10% of children are estimated to experience developmental delays. Toddlers who experience developmental delays of 1% to 3%.

From the data from the Ponorogo Health Office in 2016 the number of under-fives covered by SDIDTK was 89.4% and those experiencing developmental delays were 45 toddlers, of which 28 toddlers had language development problems and 10 toddlers had motor development disorders and 7 toddlers experienced personal social disorders. In 2017 the number of under-fives covered by SDIDTK was 94% and 62 toddlers experienced developmental delays where 35 toddlers experienced impaired language development 18 toddlers experienced impairments in personal social development and 9 toddlers experienced impaired motor development. In January to August 2018, SDIDTK had 52% experienced 71 developmental delays in which 36 toddlers experienced language development problems and 18 toddlers had motor development disorders and 17 toddlers had impaired social personal development. From these data there is still a high rate of delay in the development of infants in the ponorogo district. The Puskesmas working area has a number of developmental delay rates for toddlers, namely Babadan Health Center, South Ponorogo Health Center and Jetis Health Center.

Based on the preliminary study conducted at the Jetis Community Center there were 685 toddlers of toddler age, SDIDTK conducted 91% of children under five where 5 toddlers experienced developmental delays and 3 of them had language development problems and 2 of them had motor impairments and personal social disorders. And in the Polindes in the area of UPT Puskesmas Jetis Ponorogo on 15 September 2018 in the toddler posyandu activities, there were 52 children aged 1 to 3 years, 15 of which were carried out by SDIDTK with the results of children who developed accordingly, 11 children, 3 children with dubious development and 1 children experience developmental delays that originate from language development disorders. From the results of interviews with mothers of children who experienced developmental deviations that the child had infectious disease, namely TB at the age of 1 year, while 3 mothers of children who had developed doubts were found that the majority of the children had poor nutritional status and some children often suffered from diarrhea and 3 mothers of children whose development according to the data obtained that the child gets balanced nutrition and gets directed stimulation from his parents.

Child development is associated with several environmental factors and genetic factors. Environmental factors are divided into prenatal factors and postnatal factors. Post-natal factors include biological environment, physical factors, psychosocial factors, family factors. Biological environments such as nutritional status, health care, infectious diseases, sensitivity to diseases, metabolic functions and hormones. And for psychosocial factors include stimulation, schooling, quality of parent and child interaction and peer groups (Soetjiningsih, 2012). Infectious diseases affect linear development, infections can inhibit development through decreasing food intake and absorption of nutrients, but metabolic needs increase hence there is an inhibition in the transfer of nutrients to tissues so that it will destroy the body's defense system against microorganisms and mechanical defenses. Infectious diseases that are very risky in the development of toddler age children are Diarrhea, ARI and Tuberculosis. Children who suffer from infectious diseases are vulnerable to having poor nutritional status (Potter & Perry, 2009).

Besides the influence of nutrition, stimulation is a predictor factor. The optimal development of children is largely determined by the role of parents, where parents provide stimulation in all aspects of development. Proper stimulation will stimulate the child's brain to develop optimally. Children also need stimuli obtained by the child's outer environment in the form of social and psychological events, called psychosocial stimulation. Lack of stimulation will result in delays in child development (Soetjningsih, 2012). The purpose of this study was to analyze factors that influence the development of toddler age children in terms of history of infectious diseases, nutritional status and psychosocial stimulation in Ponorogo Regency

## METHODS

The research design used is quantitative research with a cross sectional approach with a propopotional stratified random sampling method. The samples were taken as many as 302 mothers and toddler age children in the Ponorogo regency. The test used in this study was ordinal regression.

## RESULTS

### Subject Characteristics

**Table 1.** The characteristics of the respondents in this study included the age of the child, sex of the child, history of genetic diseases, maternal age, education, employment, history of infectious diseases, nutritional status, psychosocial stimulation and child development.

No	Characteristics	ΣN	Σ%
1	<b>Age of child (month)</b>		
	12-18	89	29,5
	19-24	67	22,2
	25-36	146	48,3
2	<b>Child sex</b>		
	Boy	141	46,7
	Girl	161	53,3
3	<b>History of genetic diseases</b>		
	Nothing	295	97,7
	Yes	7	2,3
4	<b>Mother's age (year)</b>		
	<20	2	0,7
	20-35	256	84
	>35	44	14,6
5	<b>Education</b>		
	Elementary school	1	0,3
	Junior high school	21	7,3
	Senior high school	175	57,9
	University	105	34,8
6	<b>Occupation</b>		
	Housewife/does not work	163	54
	Private	76	25,2
	Entrepreneur	34	11,3
	Civil servants	29	9,6
7	<b>History of infectious diseases</b>		
	Yes	67	22,2
	No	235	77,8
8	<b>Nutritional status</b>		
	Bad	28	9,3
	Less	18	6,0
	Good	254	84,1
	Over	2	0,7
9	<b>Psychosocial stimulation</b>		

	Less	52	17,2
	Good	250	82,8
<b>Child development</b>			
10	Normal	256	84,7
	Doubtful	18	9,3
	Deviation	28	6,0
	<b>Total</b>	<b>302</b>	<b>100</b>

## STATISTICAL TEST RESULTS

**Table 2.** Pseudo R-Square Test Results

<b>Pseudo R-Square</b>	
Cox and Snell	,331
Nagelkerke	,507
McFadden	,380
Link function: Logit.	

The results of statistical tests in this study obtained Pseudo R-Square values in Nagelkerke of 0.50, which means that the history of infectious diseases, nutritional status and psychosocial stimulation affected the development of toddlers in ponorogo district. 50.7% and the rest is influenced by other factors of 49.3%.

## DISCUSSION

### Effect of Infectious Disease History on Toddler Age Child Development in Ponorogo Regency

Based on cross tabulation table 4.44 between history of infectious disease and development of toddler age there were 235 respondents (77.8%) no history of infectious diseases where 219 respondents (72.5%) experienced normal child development, 8 respondents (2.6%) doubtful child development, and 8 respondents (2.6%) experienced child development deviations. While 67 respondents (22.2%) had a history of infectious diseases where 37 respondents (12.3%) experienced normal development, 10 respondents (3.3%) experienced dubious child development, 20 respondents (6.6%) experienced developmental deviations child.

Hidayat (2009) states that children's health status can affect the achievement of the ability to maximize growth and development will be hampered because children have a critical phase. Infectious diseases can act as beginners, children experience deficiencies in energy, protein and nutrition, and others, because due to decreased appetite, there is a disruption of absorption in the digestive tract by the disease, which will worsen the condition of children's nutritional health and inhibit the child's development process (supariasa, 2012).

According to the researchers, the results showed that most respondents had no history of infectious diseases such as diarrhea, ARI and tuberculosis because mothers tried to maintain children's health by maintaining personal hygiene and fulfilling balanced nutritional needs so as to increase children's immunity, especially in weather conditions or conditions. erratic in order not to easily get an infection. Mothers assume if children easily experience pain when the growth period will affect the child's development process. The actions taken by mothers in maintaining their children's health include providing proper nutritional needs so that they can increase immunity and immunity of the child and not be susceptible to disease, in addition the mother tries to maintain the cleanliness of the surrounding environment as an effort to prevent bacterial and bacterial diseases.

### Effect of Nutritional Status on the Development of Toddler-Age Children in Ponorogo Regency

Based on cross tabulation table 4.45 between the nutritional status of the development of toddler age children, namely 254 respondents (87.4%) with good nutritional status where 242 respondents (80.1%) experienced normal child development, 6 respondents (2%) experienced dubious development, and 6 respondents (2%) experienced developmental deviations. For 28 respondents (6%) with poor nutritional status where 7 respondents (2.3%) experienced normal child development, 8 respondents (2.6%) experienced dubious development and 13 6 respondents (4.3%) experienced developmental deviations. For 18 respondents with poor nutritional status where 5 respondents (1.7%) experienced

normal child development, 4 respondents (1.3%) experienced dubious development and respondents (2%) experienced developmental deviations. And 2 respondents (1%) with nutritional status experienced more normal child development.

Nutrition (nutrition) is an important part of health for the child's development process, adequate nutritional intake supports the developmental process in the child's critical period. During this time the child experiences growth and growth and grows chased. Toddlers who experience previous malnutrition can still be improved with good intake so that they grow up according to their development, but if the intervention is too late, the child will not pursue developmental processes called development deviations (Bappenaas RI, 2013).

Based on the results of the study, it was found that out of 302 respondents there were 242 respondents (80.1%) whose nutritional status could experience normal child development and the results of ordinal regression test with a wald value of 810,900 with p value = 0,000 smaller than the value  $\alpha = (0.05)$ . Which means  $H_1$  is accepted thus there is an influence of nutritional status on child development. The nutritional status variable has an estimated value of 13,303 which shows a positive influence. Where children with good nutritional status have an influence of 13,303 times to experience normal child development compared to children who experience more nutritional status, poor nutritional status and poor nutritional status.

According to researchers, the nutritional content of food consumed every day determines the nutritional status of children. Good nutritional status can increase the power of physical growth and psychomotor, mental and social development. Nutritional deficiencies in children will have an impact on growth limitations, are susceptible to infectious diseases and can ultimately hinder a child's development. So that children need to get nutrition from daily food in the right amount and good quality.

### **Effects of Psychosocial Stimulation on Child Development**

Based on cross tabulation table 4.46 between psychosocial stimulation and the development of toddler age children, there were 250 respondents (82.8%) with good psychosocial stimulation where 221 respondents (73.2%) experienced normal child development, 12 respondents (4.0%) experienced doubtful child development, 17 respondents (5.6%) experienced developmental deviations. For 52 respondents (17.2%) with less psychosocial stimulation where 35 respondents (11.6%) experienced normal child development, 6 respondents (2.0%) experienced dubious child development and 11 respondents (3.6%) experienced irregularities development.

According to the World Health Organization (WHO) in the 2016 mental health department report that maternal and child bonding can be done through the provision of psychosocial stimulation that is beneficial to children's development. The formation of this bond in the early years of life is an important step in the development of the next stage including motor, emotional and social development. Psychosocial stimulation can also be interpreted as the existence of an environment that provides physical stimulation including sensory input including visual, auditory and tactile, as well as emotional stimulation resulting from loving bonds between mother and child (WHO, 2016).

According to the Researcher, stimulation is very important for parents to develop children's development. Children who do not get good psychosocial stimulation such as being invited to play, or unable to get an environment that stimulates brain growth will experience developmental delays compared to their age children who get enough stimulation. The delay is not in the form of intelligence but also affects the formation of the child's personality.

### **Dominant factors that influence the development of toddlers in Ponorogo Regency**

In the Infection History (X1) variable, the wald value is 10,356 with p value = 0.001 smaller than  $\alpha = (0.05)$ . In Nutritional Status variable (X2) wald value is 810,900 with p value = 0,000 smaller than  $\alpha = 0.05$ . In the Psychosocial Stimulation variable Wald value is 7.952 with p value = 0.005 smaller than  $\alpha = (0.05)$ . The lowest / smallest p value is found in the nutritional status variable where the p value is  $0,000 < \alpha = 0.05$ . It can be concluded that the Nutritional Status variable is the dominant factor that influences the development of toddler age children.

Wirjatmadi (2014) states that nutrition is an important component in supporting children's development. The quality of child development is influenced by external and internal factors. One that affects children's development is nutritional status or fulfillment of nutritional needs. Nutrition is the main component in the sustainability of the growth and development process. Developments will tend



to be good, this is very possible because good nutritional status shows that the nutrients needed by the body or tissue in order to function, grow and develop have been fulfilled. Khomsan (2018) also states that children who are vulnerable to nutrition are a group of toddler age children. Because at this time the process of growth and development is very rapid, so the role of parents is very important, namely in nurturing, caring for and honing children during the process of growth and development, especially mothers. The mother is the person who is closest to the child as well as regulating the availability of food for her family. the role of mothers in food intake for their children is related to maternal education level, type of work, family income.

The researcher finally said that children in the toddler period, namely in the golden period, the most important nutritional needs in supporting and forming a development foundation. At this time the brain is experiencing very rapid growth to support the development of children both motoric, linguistic and socialization of children's independence. In fulfilling its nutritional needs, the ability of mothers to make decisions has a broad impact on the lives of all family members as the basis for providing appropriate and quality parenting patterns for children including nutrition care. The low level of education of parents and poverty is the two most common causes of malnutrition. Maternal education will influence attitudes and mindsets in paying attention to toddlers' food intake starting from finding, obtaining and receiving information about knowledge of nutrition intake.

## CONCLUSION

There is an influence between the history of infectious diseases and the development of toddlers in ponorogo district with a p value of  $0.001 < \alpha = (0.05)$ .

There is an influence between nutritional status and the development of toddler-age children in the Ponorogo Regency with a p value =  $0,000 < \alpha = (0,05)$ .

There is an influence between Psychosocial Stimulation and the development of toddlers in ponorogo district with a p value =  $0.005 < \alpha = (0.05)$ .

The dominant factor that influences the development of toddler age in ponorogo district is nutritional status.

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